REMARKS

Claims 1-20 are pending in the subject application. Claims 1, 2, and 11 stand rejected under 35 U.S.C. 102(b). Claims 3-10 and 12-15 stand rejected under 35 U.S.C. 103(a). Claims 1-15 stand rejected under 35 USC 112, second paragraph. Claims 1, 2, 4-8, and 11-14 have been amended. Claims 16-18, which were previously added pursuant to a PCT Article 34 amendment, are "newly" added and claims 19 and 20 are newly added. Objections have been raised with respect to figures 6, 7, 8(a), 8(b), and 14. Figures 6, 7, 8(a), and 8(b) have been amended. Figure 14 has been deleted.

The Applicants appreciate the Examiner's thorough examination of the subject application and respectfully request reconsideration of the subject application based on the above amendments and the following remarks.

35 U.S.C. § 112, SECOND PARAGRAPH REJECTIONS

Claims 1-15 stand rejected under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of the present invention. Claims 1, 2, 4-8, and 11-14 have been amended. Accordingly, the Applicants believe that the grounds for rejection are moot.

35 U.S.C. § 102(b) REJECTIONS

The Examiner has rejected claims 1, 2, and 11 under 35 USC 102(b) as being anticipated by International Application Number PCT/US87/01214 to Bonnet, et al., which was published on December 3, 1987 as International Publication Number WO

87/07395 ("Bonnet" or the "Bonnet Reference"). The Applicants respectfully traverse these rejections for reasons detailed below.

The Bonnet reference discloses a liquid crystal display ("LCD") device that purports to enhance display contrast by "active addressing" or, more specifically, by

> successive illumination or exposure to illumination of groups of pixel lines at least during part of the time in which they show maximum contrast, addressing of the illumination or of the exposure to illumination being adapted to the duration and phase of addressing of the individual pixel lines.

Bonnet, page 3, lines 23-28 (Emphasis added). The principle of "active addressing" addresses voltage decay problems between successive lines that cause a decrease in contrast with time. Accordingly, Bonnet teaches controlling transistors at each pixel to prevent voltage decay, and therefore reduced contrast, by ensuring that the voltage at the pixel remains constant. See, e.g., Id., page 2, lines 6-27.

According to Bonnet, a pixel is illuminated during a short time t_B rather than during the total time t_F. See, e.g., Id., page 6, lines 7-9; FIG.1. More specifically, an illuminating plate is divided into strips 4 comprising a plurality of pixel lines. See, e.g., Id., page 6, lines 21-25. The strips 4 are switched on successively, in sync with the line switching of the display. See, e.g., Id., page 6, line 27 to page 7, line 3. In short, as shown in FIG. 1, the Bonnet device enhances contrast by maintaining constant voltage between time t_0 and t_B. Accordingly, the Bonnet reference dose not teach, mention or suggest the invention as claimed.

The present invention provides a visibility-improved impulse-type display device that does not use a color filter and a method of driving the device. See, e.g., Specification, page 5, lines 21-25. The effect of the present invention is the realization of high animation without blurred edges and persistent images while keeping high display luminance. See, e.g., Id., page 50, line 2 to page 51 line 2. Reduction of power

consumption of the scanning lines is an object of the present invention but not the prime result of the same.

According to the invention as claimed, scan signals G_n and data signals S_n are synchronously transmitted through scan electrodes 9 and signal electrodes 10, respectively. The scan signals G_n activate a row or line of gates and the data signals S_n control the amount of transmitted light as a function of the magnitude of the voltage. See, e.g., Id., page 20, lines 1-9. In contrast to the Bonnet device,

> light output layers 4 are not allowed to shine while the electrodes 9, 10 are transmitting signals to send a display content to the liquid crystal part. The light output layers are allowed to shine only after the liquid crystal part is in a state matched to the display content, that is, only after the liquid crystal 3 has sufficiently responded to the signals.

Id., page 20, lines 12-19 (Emphasis added). Bonnet does not teach, mention or suggest controlling light output layers so that they only shine after the liquid crystal has sufficiently responded to scan and data signal G_n and S_n.

Thus, it is respectfully submitted that, claims 1, 2, and 11 are not anticipated by Bonnet and, further, satisfy the requirements of 35 U.S.C. 100 et seq., especially § 102(b). As such, the Applicants believe that claims 1, 2, and 11 and all claims depending therefrom are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

35 U.S.C. § 103(a) REJECTIONS

The Examiner has rejected claims 12 and 13 under 35 USC 103(a) as being unpatentable over Bonnet; claims 3-6, 9, 10, 14, and 15 under 35 USC 103(a) as being unpatentable over Bonnet in view of U.S. Patent Number 4,772,885 to Uehara, et al. ("Uehara" or the "Uehara Reference"); and claims 7 and 8 under 35 USC 103(a)

as being unpatentable over Bonnet in view of Uehara further in view of U.S. Patent Number 5,535,027 to Kimura, et al. ("Kimura" or the "Kimura Reference"). The Applicants respectfully traverse these rejections for reasons detailed below.

Claims 12 and 13

For the same reasons provided above that the Bonnet reference does not anticipate the invention as claimed, Bonnet also does not make the present invention obvious. Therefore, it is respectfully submitted that, claims 12 and 13 are not made obvious by Bonnet and, further, satisfy the requirements of 35 U.S.C. 100 et seq., especially § 103(a). As such, the Applicants believe that claims 12 and 13 are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested

Claims 3-6, 9, 10, 14, and 15

Nor can the Uehara reference cannot make up for the deficiencies of the Bonnet reference. Uehara discloses a color display device having either an electroluminescent ("EL") light source or a fluorescent light source in combination with a color filter. See, e.g. Uehara, Abstract. More specifically, in several embodiments, transparent electrode elements 21 are aligned with EL light-emitting pixel elements 43 so that application of a voltage to the pixel electrodes elements 21 controls light passing through the LCD. See, e.g., Id., col. 4, lines 25-35. In other embodiments, fluorescent materials are excited to emit red, green and blue light that passes through color filters. However, Uehara does not teach at least one light output layer that is arranged in stripes and that extends in the same direction as the gate electrodes wherein the output layer is allowed to shine after the liquid crystal has responded to applied scan and data signals. Accordingly, the combination of Bonnet in view of Uehara does not make the present invention unpatentable.

Thus, it is respectfully submitted that, claims 3-6, 9, 10, 14, and 15 are not made obvious by Bonnet in view of Uehara and, further, satisfies the requirements of 35 U.S.C. 100 et seq., especially § 103(a). As such, the Applicants believe that the claims are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Claims 7 and 8

Nor can the Kimura reference make up for the deficiencies of the Bonnet and Uehara references. Kimura discloses a display device wherein a plurality of luminous sources arrayed in parallel with each other, a plurality of linear electrodes arrayed with each other, wherein the luminous sources are crossed with the linear electrodes, and a plurality of photoconductive layers provided at these crossed positions. See, e.g., Kimura, Abstract. Kimura does not teach at least one light output layer that is arranged in stripes and that extends in the same direction as the gate electrodes wherein the output layer is allowed to shine after the liquid crystal has responded to applied scan and data signals. Accordingly, the combination of Bonnet in view of Uehara further in view of Kimura does not make the present invention unpatentable.

Thus, it is respectfully submitted that, claims 7 and 8 are not made obvious by Bonnet in view of Uehara further in view of Kimura and, further, satisfies the requirements of 35 U.S.C. 100 et seq., especially § 103(a). As such, the Applicants believe that the claims are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested

The Applicants believe that no additional fee is required for consideration of the within Response. However, if for any reason the fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Respectfully submitted,

Date: July 14, 2003

By: _____
George W. Hartnell, III
Reg. No. 42,639
Attorney for Applicants

EDWARDS & ANGELL, LLP
P.O. Box 9169
Boston, MA 02209
(617) 517-5523
Customer No. 21874
334587

ANNEX TO RESPONSE TO OFFICE ACTION
CONTAINING MARKED-UP VERSIONS OF AMENDMENTS
TO THE SPECIFICATION AND CLAIMS

Please **amend** the following claims:

1. (Amended) An optical control device, comprising:

a first substrate with at least one light output layer;

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates,

first electrodes, on one of the first and second substrates, for applying multiple scan signals; and

second electrodes, on the other of the first and second substrates, for applying multiple signal voltages; and

~~one of the first and second substrates having electrodes for applying multiple scan signals, one of the first and second substrates having electrodes for applying multiple signal electrodes,~~

a layer with a light polarizing function on the first substrate,

wherein

the light output layer is arranged in stripes and extends in the same direction as the first electrodes ~~for applying scan signals.~~; and

the first substrate, the light output layer, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order.

2. (Amended) An optical control device, comprising:

a first substrate with at least one light output layer;

a second substrate with a light transmitting function, positioned opposite to the first substrate; ~~and~~

multiple active elements on one of the first and second substrates;

~~a liquid crystal sandwiched between the first and second substrates,~~

~~one of the first and second substrates having multiple active elements, one of the first and second substrates having gate electrodes for applying multiple scan signals, one of the first and second substrates having source electrodes for applying multiple signal electrodes,~~

gate electrodes, on the one of the first and second substrates, for applying multiple scan signals; and

source electrodes, on the other of the first and second substrates, for applying multiple signal voltages,

wherein:

each light output layer is arranged in stripes and extends in the same direction as the gate electrodes;

each light output layer shines simultaneously with adjacent light output layers, but with a different wavelength from those of the adjacent light output layers; and

the light output layers shine when a specified time has elapsed after a set of scan signals are transmitted to the gate electrodes and extinguish before a succeeding set of scan signals are transmitted.~~wherein~~

~~the light output layer is arranged in stripes and extends in the same direction as the gate electrodes.~~

4. (Amended) The optical control device as defined in ~~any one of~~ claim[[s]] 2~~1 through 3~~, further comprising:

a layer with a light polarizing function on the first substrate.~~wherein the first substrate has a layer with a light polarizing function.~~

5. (Amended) The optical control device as defined in ~~any one of~~ claim[[s]] 1 ~~through 3~~, wherein:

the light output layer provided on the first substrate is formed by a light emitting layer composed of at least one of an organic EL light emitter, an inorganic EL light emitter, and an FED light emitter;

~~a first electrode film, the light emitting layer, and a second electrode film are provided in this order on the first substrate;~~ and

the light emitting layer shines with application of a voltage across the first electrodes and the second electrode~~s films~~.

6. (Amended) The optical control device as defined in claim 24, wherein:

the light output layer provided on the first substrate is formed by a light emitting layer composed of at least one of an organic EL light emitter, an inorganic EL light emitter, and an FED light emitter;

the gate electrodes, the light emitting layer, and the source electrodes are provided in this order on the first substrate~~a first electrode film, the light emitting layer, and a second electrode film are provided in this order on the first substrate~~; and

the light emitting layer shines with application of a voltage across the gate electrodes and the source electrodes~~the first and second electrode films~~.

7. (Amended) The optical control device as defined in ~~any one of~~ claim[[s]] 1 ~~through 3~~, wherein

the light output layer includes ~~provided on the first substrate is formed by a combination of~~ an optical waveguide and a light source coupled to the optical waveguide and positioned in a non-display section area.

8. (Amended) The optical control device as defined in claim 24, wherein

the light output layer includes~~provided on the first substrate is formed by a combination of~~ an optical waveguide and a light source coupled to the optical waveguide and positioned in a non-display section area.

11. (Amended) ~~A method of driving an optical control device as defined in either one of claims 1 and 2,~~ An optical control device-driving method, comprising the steps of:

(a) using an optical device including:

a first substrate with at least one light output layer;

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates;

first electrodes, on one of the first and second substrates, for applying multiple scan signals;

second electrodes, on the other of the first and second substrates, for applying multiple signal voltages; and

a layer with a light polarizing function on the first substrate,

wherein:

the light output layer is arranged in stripes and extends in the same direction as the first electrodes; and

the first substrate, the light output layer, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order, and

(b) setting such that ~~wherein~~

the light output layer shines for a duration of 5~~0~~ to 70% of each display frame time.

12. (Amended) The optical control device-driving method as set forth in claim 11~~A method of driving an optical control device as defined in either one of claims 1 and 2~~, wherein

the light output layer shines for a duration of 15% to 40% of each display frame time.

13. (Amended) ~~A method of driving an optical control device as defined in either one of claims 1 and 2, wherein~~An optical control device-driving method, wherein:

(a) an optical device is used, the optical device including:

a first substrate with at least one light output layer;

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates;

first electrodes, on one of the first and second substrates, for applying multiple scan signals;

second electrodes, on the other of the first and second substrates, for applying multiple signal voltages; and

a layer with a light polarizing function on the first substrate,

wherein:

the light output layer is arranged in stripes and extends in the same direction as the first electrodes; and

the first substrate, the light output layer, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order, and

(b) the light output layer shines when a specified time has elapsed after a set of scan signals are transmitted to scan lines and extinguishes before a succeeding set of scan signals are transmitted.

14. (Amended) ~~A method of driving an optical control device as defined in either one of claims 1 and 2, wherein:~~An optical control device-driving method, wherein:

(a) an optical device is used, the optical device including:

a first substrate with at least one light output layer,

a second substrate with a light transmitting function, positioned opposite to the first substrate;

a liquid crystal sandwiched between the first and second substrates;

electrodes, on one of the first and second substrates, for applying multiple scan signals;

electrodes, on the other of the first and second substrates, for applying multiple signal voltages; and

a layer with a light polarizing function on the first substrate,

wherein:

the light output layer is arranged in stripes and extends in the same direction as the electrodes for applying the multiple scan signals; and

the first substrate, the light output layer, the layer with a light polarizing function, the liquid crystal, and the second substrate are arranged in this order;

(b) the light output layer shines when a specified time has elapsed after a set of scan signals is transmitted to scan lines and extinguishes before a succeeding set of scan signals is transmitted;

(c) the light output layer shines with a different wavelength from those of adjacent light output layers; and

(d) more than one light output layers that shine with mutually different wavelengths are caused to shine simultaneously.